



GSMA Internet of Things Case Study Project Xcelerate: Powering the future of drone services across the UK

INTRODUCTION

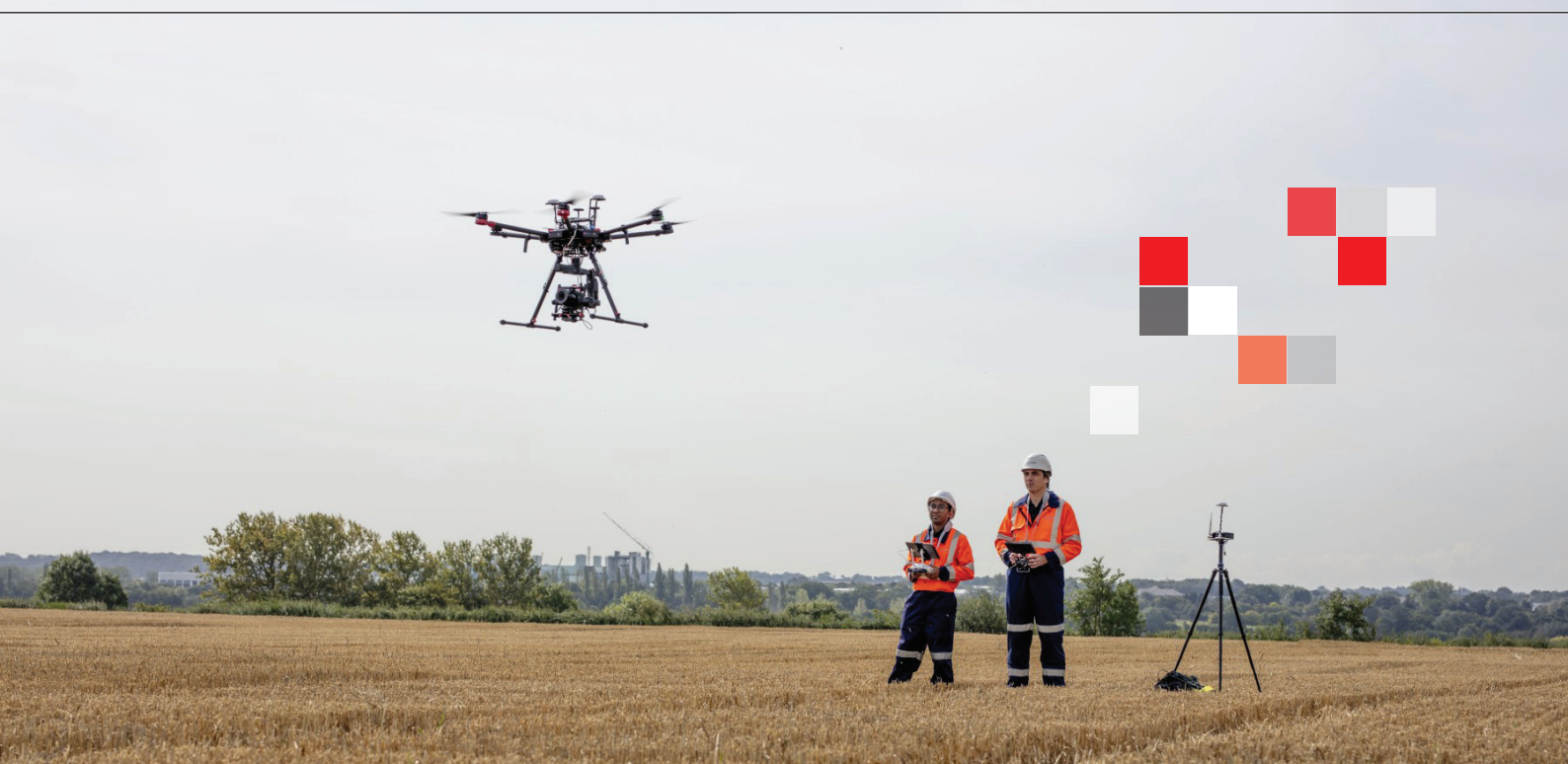
The mobile communications and aviation industries are coming together in exciting new ways. When paired with cellular connectivity, low-altitude unmanned drones can support ground-breaking use cases such as search and rescue, infrastructure inspections, precision agriculture, and even the delivery of medical supplies to help improve access to healthcare and save lives.

The GSMA is actively working with the mobile communications and aviation industries to maximise the use of Beyond-Visual-Line-of-Sight (BVLOS) capabilities for Unmanned Aircraft Systems (UAS) and help create an open and trusted regulatory environment. In partnership with the Global Unmanned Traffic Management Association (GUTMA), the GSMA has launched Aerial Connectivity Joint Activity (ACJA) which focuses on promoting interchange and understanding between the aviation and cellular communities. The purpose being to enhance information sharing and collaboration to enable Unmanned Aerial Vehicles (UAV) operating BVLOS and unleash the potential of drones throughout Europe.

BT is a prime example of how communication service providers are laying the groundwork and investing in a future of cellular-connected drone services.

Commercial cellular connectivity is an important enabler for the emerging drone market, supporting key requirements of the drone ecosystem, such as control, security and law enforcement. By providing secure and resilient mobile network connectivity through the power of 4G and 5G commercial networks via its EE mobile arm¹, communication service providers like BT are playing a vital role in ensuring that drones remain connected for greater situational awareness, accurate positioning and collision avoidance – making sure that drones can be operated safely and responsibly across UK skies. Utilising an existing commercial cellular network provides an economically viable route to accelerate connected drones at scale. The approach negates the need for significant new investment in infrastructure and associated delay to market.

¹ EE is part of BT Group



BT LED PROJECT XCELERATE IS POWERING THE UK'S FIRST COMMERCIAL DRONE CORRIDOR

In December of 2020, BT, together with Unified Traffic Management (UTM) technology provider Altitude Angel and a number of UK tech start-ups, were selected by UK Research and Innovation to deliver "Project Xcelerate" – a key Future Flight Challenge project backed by the UK Government's Industrial Strategy. Project Xcelerate will establish the UK's first commercial drone corridor in open and unrestricted airspace, located south of Reading, Berkshire.

Project Xcelerate seeks to demonstrate how using a commercial mobile network, drones can operate safely in the same airspace as manned aviation in order to overcome the challenge of enabling safe BVLOS flights, essential to accelerating the adoption of fully automated drones in unrestricted UK airspace. Joining BT and Altitude Angel, as part of the consortium, are drone technology experts from Dronecloud, HeroTech8 and Skyports, cyber security provider Angoka, and end user experts SkyBound Rescuer and DroneStream.

Dave Pankhurst, Head of Drone Solutions at BT, said: "The social and economic potential of a drone-accelerated economic recovery is immense² and requires the

Government, regulators and the industry to work together at pace. GSMA's ACJA interface helps to support the collaboration of critical information between mobile network operators and the UTM ecosystem for safe drone operations. Through Project Xcelerate, BT is proud to be bringing together world leading drone expertise, with its secure and resilient network connectivity, to launch the UK's first commercial drone corridor."

“ Through Project Xcelerate BT is proud to be bringing together world leading drone expertise, with its secure and resilient network connectivity, to launch the UK's first commercial drone corridor.

Dave Pankhurst, Head of Drone Solutions at BT

LIFE SAVING USE CASES

In summer 2021, the BT led consortium will start conducting flight trials along the 8km-long corridor to showcase how drones can provide value across various verticals, including healthcare and the emergency services, as well as critical infrastructure.



² PWC, *The impact of drones on the UK economy*, 2018

For example, use cases under exploration include 3D mapping and HD-video to help first responders locate and investigate emergency incidents. The emergency services could send drones to assess traffic accidents and fires to determine appropriate response efforts before deploying additional crews and resources. Project Xcelerate will explore how drone technology can be used to speed up response times for such incidents, helping to improve the chances of survival, whilst also reducing costs and driving efficiencies for the emergency services.

Helping the healthcare and pharmaceutical sectors to improve standards of patient care will also be explored. For example, drones can assist in delivering urgently needed medical supplies when time is critical.

The project will also explore how drones can also be used to assess damage or maintenance requirements for critical national infrastructure - including oil and gas pipelines, power lines, railway tracks, and cell towers. This will help to ensure the delivery of critical utility and transport services to the public.

4G and 5G connectivity play a pivotal role in powering such use cases, through enabling the live streaming of images, video or other data captured by sensors. This allows the operators to review this information as the drone is in flight and take appropriate actions to ensure all relevant data is collected and inspections completed as required.

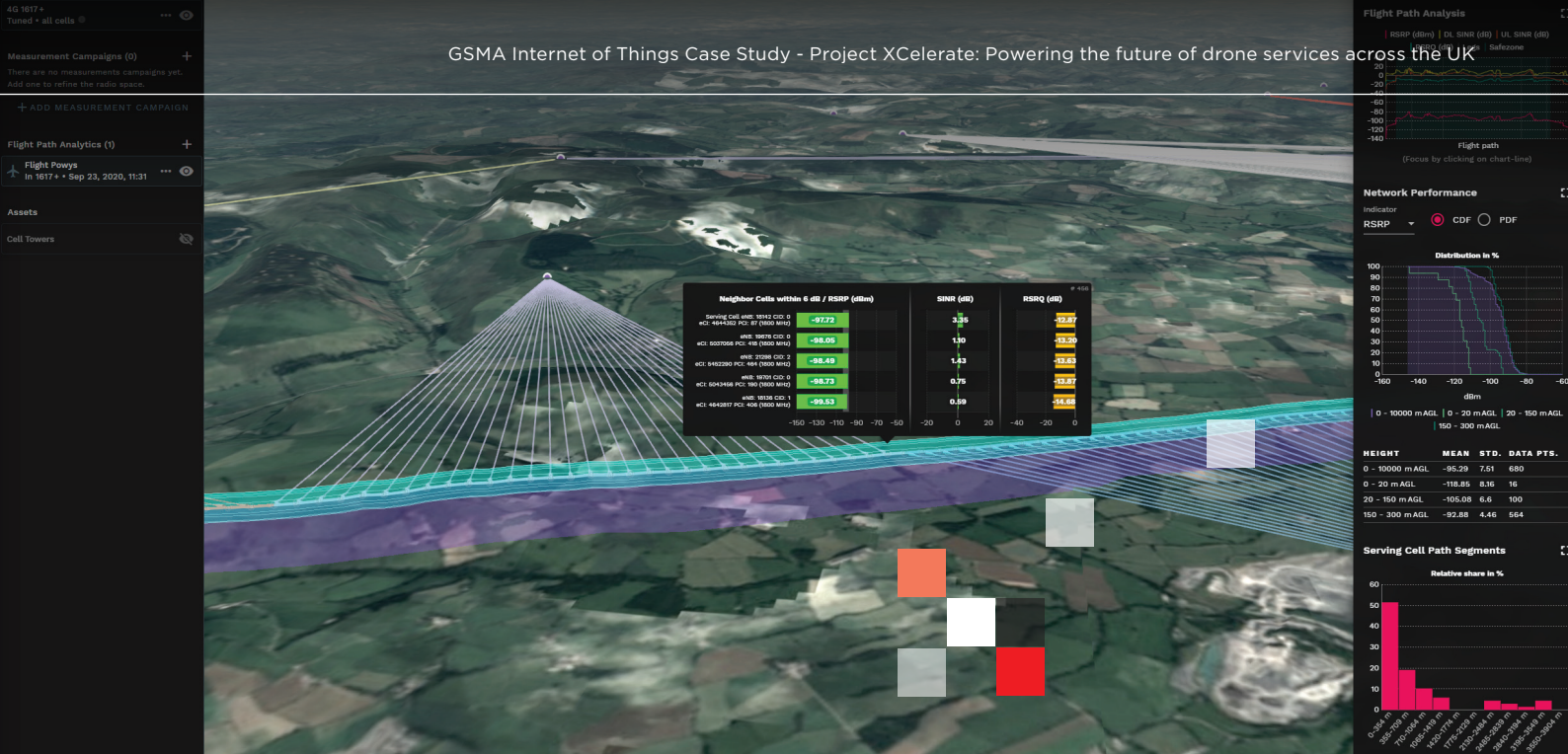
THE ROLE OF CELLULAR CONNECTIVITY IN ENABLING SAFE AND SECURE BVLOS FLIGHTS

BT's strengths in reliable, secure, high bandwidth, low-latency radio and fixed connectivity mean it is ideally placed to lead 'Project Xcelerate'. Its EE mobile network – the biggest and fastest network in the UK, and the trusted provider behind the critical Emergency Services Network (ESN) – will ensure that a safe commercial drone corridor can be established with optimal mobile coverage at low altitude.

BT will provide the critical communications required for BVLOS environments such as GPS location, remote identification, command and control, redundant geo-awareness, and live notifications (NOTAMs³) sent directly to drones in-flight. BT will seek to provide the assurance that commercial cellular networks are able to support such services at altitude, including both control of the drone and other services, such as 3D mapping and HD video streaming. BT's drone detection capability will also play an important role in enabling safe BVLOS drone flights at scale by bringing 'single-point situational awareness' to managed airspace. By clearly distinguishing between known, authorised operations, and unknown, potential threats, effective responses can be quickly executed without disrupting existing authorised activities.

³ Notice to Airmen (NOTAM) generally refers to information in a location that could affect the safety of the flight.





To support Project Xcelerate, BT provides a critical communications channel incorporating TEOCO's AirborneRF platform. AirborneRF assesses the flight path to ensure the drone can maintain adequate and continuous cellular coverage for every flight. It also assures minimum performance-based requirements and live information during flight operations, to cope with the dynamic behaviour of the cellular infrastructure. In addition, AirborneRF proactively monitors and logs communications signal performance across the entire flight path. If there is any risk of degradation in service, it provides alerts to the Altitude Angel Guardian UTM system allowing the platform to identify alternative routes that can then be presented to the end operator.

One of the more challenging pieces of determining flight path safety is understanding the risk on the ground based on network analysis. AirborneRF accurately determines that information and provides this data to the UTM allowing the operator to create the safest flight path with the lowest population density before each flight. Eco-system partners can also use this information to contribute to automated risk mitigation efforts and Specific Operational Risk Assessments (SORA).

"TEOCO's AirborneRF allows BT to provide connectivity and population density & mobility data to support risk mitigation for a safe flight corridor for their partners to test new UAV use cases," stated Thomas Neubauer, Vice President, Business Development at TEOCO. "We have created a standardized interface for seamlessly connecting the MNO with the UTM ecosystem. We consider this a major step towards the deployment of BVLOS drone services across the UK at scale."

We have created a standardized interface for seamlessly connecting the MNO with the UTM ecosystem. We consider this a major step towards the deployment of BVLOS drone services across the UK at scale..

Thomas Neubauer, Vice President, Business Development at TEOCO.

BUILDING THE CASE FOR BVLOS

From improved mobility, connectivity, healthcare and manufacturing output, to reduced road congestion and pollution, automated drone technology will transform the quality of our lives. Connectivity is at the heart of ensuring the successful adoption of drone capabilities if the service is to be scaled.

Project Xcelerate is bringing together capabilities and expertise from across the drone ecosystem and within the cellular communities to enable the safe integration and use of fully autonomous drones into civil airspace and bring countless benefits to businesses, the public sector and the citizens of the UK.

The project serves as an important steppingstone in the development pathway to establish the technology, safety and commercial cases for delivering real-world BVLOS drone flights, at scale. By providing a framework from which towns, cities, organisations and networks can follow in order to economically and safely 'open up' portions of the sky in this way, the initiative offers exciting new possibilities into the future of drone flight.

About GSMA

The GSMA represents the interests of mobile operators worldwide, uniting more than 750 operators and nearly 400 companies in the broader mobile ecosystem, including handset and device makers, software companies, equipment providers and internet companies, as well as organisations in adjacent industry sectors. The GSMA also produces the industry leading MWC events held annually in Barcelona, Los Angeles and Shanghai, as well as the Mobile 360 Series of regional conferences.

The GSMA is actively working with the telecoms and aviation industries to maximise the use of beyond-visual-line-of-sight capabilities for UAS, develop new use cases and help create an open and trusted regulatory environment. There are two drone-related initiatives, making progress in this area – the [Drones Interest Group \(DIG\)](#) and [Aerial Connectivity Joint Activity \(ACJA\)](#).

For more information, please visit www.gsma.com/aviation

About Project XCelebrate

BT, together with Altitude Angel and a number of UK tech start-ups, have been selected by UK Research and Innovation to deliver a Future Flight Challenge project called Project XCelebrate. The consortium plans to establish a commercial drone zone in open and unrestricted airspace, located south of Reading, Berkshire.

In summer 2021, the project will conduct flight trials along the 8km-long zone to demonstrate how drones can operate safely in the same airspace as manned aviation. The consortium will demonstrate key industry use cases across healthcare, emergency services and infrastructure to illustrate how drone deliveries and inspection can benefit business, the public sector and UK citizens.

Project XCelebrate aims to widen the use of UTM systems by providing a framework which towns, cities, organisations and networks can follow in order to 'open up' portions of the sky. The project aims to realise commercial automated BVLOS flight zone in which any compatible vehicle can connect into and fly within safely.

Joining BT, the consortium includes drone technology experts from Altitude Angel, Dronecloud, HeroTech8 and Skyports, cyber security provider Angoka, and end user experts SkyBound Rescuer and DroneStream.

For more information, visit

www.bt.com/business/drone-solutions

About BT

BT Group is the UK's leading telecommunications and network provider and a leading provider of global communications services and solutions, serving customers in 180 countries. Its principal activities in the UK include the provision of fixed voice, mobile, broadband and TV (including Sport) and a range of products and services over converged fixed and mobile networks to consumer, business and public sector customers. For its global customers, BT provides managed services, security and network and IT infrastructure services to support their operations all over the world. BT consists of four customer-facing units: Consumer, Enterprise, Global and its wholly-owned subsidiary, Openreach, which provides access network services to over 650 communications provider customers who sell phone, broadband and Ethernet services to homes and businesses across the UK.

For the year ended 31 March 2021, BT Group's reported revenue was £21,331m with reported profit before taxation of £1,804m.

British Telecommunications plc is a wholly-owned subsidiary of BT Group plc and encompasses virtually all businesses and assets of the BT Group. BT Group plc is listed on the London Stock Exchange.

For more information, visit www.bt.com/about



About TEOCO

TEOCO is a leading provider of analytics, assurance and optimization solutions to over 300 communication service providers (CSPs) worldwide. Our solutions enable the digital transformation of CSPs while enhancing their network QoS, improving their customer experience and reducing their operational costs.

Through advanced analytics and automation, TEOCO solutions provide actionable and measurable insights into network and customer behavior. This includes the optimization, effective monetization, and delivery of new and existing services, such as VoLTE and Video. Our commitment to network flexibility and agility makes TEOCO the obvious choice for CSPs looking to leverage NFV/SDN and the rise of 5G, and to maximize the revenue potential of new opportunities tied to video and the emerging Internet of Things (IoT).

For more information, visit www.teoco.com

